18.014 (CALCULUS WITH THEORY) SYLLABUS

		I. Real Numbers
Sept.	Th. 7	Axioms for the real numbers I 3.1–3.7
	F 8	Integers, exponents, summations [Notes A], I 4.1–4.6
	T 12	Least upper bounds I 3.8–3.10, [Notes B]
	Th 14	Triangle inequality, functions I 4.8, 1.2, 1.4, 1.8–1.10
		II. The Integral
	F 15	Definition of the integral 1.12, 1.14–1.17
	T 19	$\int x^p$; properties of the integral [Notes C]
	Th 21	Proofs of properties, applications [Notes D], pp. 88–90, 113–114
	F 22	Piecewise-monotonic functions 1.20–1.21 [Notes E]
		III. Limits and Continuity
	T 26	Limits 3.1–3.4 [Notes F]
	Th 28	Proofs of limit theorems 3.5–3.7
	F 29	Quiz 1
Oct	T 3	Intermediate-value theorem 3.9–3.12
	Th 5	Inverse functions 3.13 [Notes G]
	F 6	Small-span theorem and extreme-value theorem [Notes H]
		IV. Derivatives.
	Th 12	Derivatives 4.3; pp. 163–166, 4.7, 4.8
	F 13	Composite and inverse functions, $\sqrt[n]{x}$ 6.20, 4.10 [Notes I]
	T 17	Mean-value theorem 4.13–4.18
	Th 19	The fundamental theorems of calculus [Notes K]
	F 20	The trigonometric functions [Notes L]
	T 24	Quiz 2
		V. Elementary Functions; Integration Techniques
	Th 26	Integration by substitution and by parts 5.7, 5.9
	F 27	Logarithms and exponentials 6.7, 6.16 [Notes M]
	T 31	Inverse trig functions; trig substitution 6.21
Nov.	Th 2	Integration techniques 6.23 [Notes N]
		VI. Taylor's Formula and Limits
	F 3	Taylor's formula; applications 7.1, 7.2 [Notes O]
	T 7	Proof of Taylor's formula [Notes O]
	Th 9	L'Hopital's rule; infinite limits 7.12–7.16 [Notes P]
	T 14	Behavior of log and exp
		VII. Infinite Series
	Th 16	Sequences and series, geometric series 10.1–10.6, p. 388
	F 17	Quiz 3
	T 21	Absolute convergence, integral test 10.11, 10.18, 10.13
	T 28	Tests: comparison, root, ratio 10.12, 10.15 [Notes Q]
	Th 30	Alternating series, improper integrals 10.17, 10.23
		VIII. Series of Functions
Dec.	F 1	Power series 11.1 [Notes R]
	T 5	Properties of power series [Notes R]
	Th 7	Taylor series 11.9, 11.1 [Notes S]
	F 8	Fourier series
	T 12	Spare/Review
Finals Wk		Quiz 4

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